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ABSTRACT

This study explored the levels of anxiety over computer use of high school students based on sex, grade level, and prior computer experience. Subjects were 67 high school students, 38 males and 29 females. The instrument used was a computer anxiety subscale of 10 items from an instrument designed by Loyd and Gressard (1984). The items presented positively and negatively worded statements about reactions to computer use, and students were asked to respond using a four-category scale ranging from strongly agree to strongly disagree. The data showed that both gender and computer experience, but not grade level, produced a significant difference in computer anxiety. Male students had higher mean scores, indicating less anxiety, than female students, and students with more computer experience received higher mean scores than students who had less computer experience. (3 tables and 9 references) (EW)

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Computerphobia: An Empirical Study

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Computerphobia," a person's anxiety and fear about computers, is a widespread dilemma affecting many people today according to Jay (1981). Bork (1984) reported that by April, 1984, schools in the U.S. provided about 350,000 computers for public school students. Furthermore, he estimated that this figure for public schools has doubled every year. As computers become increasingly common in our educational institutions, it is important to define possible computerphobic reactions that may surface to inhibit the learning process.

Lawton and Gerschner (1982), in a review of the literature on computer attitudes, observed some degree of anxiety among students in attempts to master computer skills. Jay (1981) concluded that, for some students, computer experience was unpleasant. These students developed a degree of anxiety when required to master computer skills, and their anxiety resulted in negative attitudes to computer technology and fear of computers, often resulting in hostility. Clement (1981) believed that computerphobia was either a complete rejection or a slow acceptance of computers.

The purpose of this study is to measure computer anxiety among high school students in order to point out a link between computer anxiety and some selected variables. Since the introduction of computers into the classroom is relatively young, little research has been done on computer anxiety and the variables which are associated with it. Computer experience is a variable that has been taken into

account in different studies. Studies by Mathis and others (1970), Loyd and Gressard (1984a), and Koohang (1986) have found that computer experience is significantly related to computer anxiety. Students that had more computer experience expressed less anxiety to the use of computers. This study also takes prior computer experience into account and breaks it into three different categories (less than one week, one week to six months, and over six months) to see whether one's computer experience relates to more positive attitudes to the computer. Grade level has been selected as a variable since experience and grade level are related. Grade level infers that the amount of exposure one has had to new learning experiences, therefore, one might exhibit less anxiety to learning the use of a computer at higher grade level. Gender has been selected because of gender related differences in anxiety about learning that have been found. Fennema & Sherman (1978) reported gender-related differences in anxiety toward math. Females expressed more anxiety than males in learning this subject, and this could also be true when anxiety toward computers is being measured. Therefore, gender is given special attention in this study, although no significant affect on gender was reported in studies conducted by Loyd and Gressard (1984a) and Koohang (1986). Computer anxiety is defined as an anxiety to the use of computers or learning related to the use of computers.

METHOD

Instrument

The instrument used for this study was a computer anxiety subscale of 10 items from an instrument designed by Loyd and Gressard (1984b). The items presented positively and negatively worded statements such as, "Computers do not scare me at all," and "Working on a computer would make me very nervous." The responses for the positively worded items were then qualified into four categories: strongly agree = 4, slightly agree = 3, slightly disagree = 2, and strongly disagree = 1. This scoring strategy results in more accurately defined scores in computer anxiety levels. The internal consistency (alpha coefficient) of this instrument was 0.86. According to Loyd and Gressard (1984b) the result of this reliability coefficient suggests that this instrument is suitable to measure one's anxiety toward the use of computers.

Procedure

The subjects for this study were 67 high school students attending Mississippi Valley, Unit District 166, in Illinois during the 1986 Spring Semester. The subjects were 38 males and 29 females in grades 9 through 12, ranging in age from fourteen to eighteen. The instrument, was explained to the students before it was administered and they were assured that the responses would be both anonymous and

confidential.

Research Questions

The study was designed to answer the following questions:

- (1) Is there a difference among the levels of grade level on computer anxiety scores?
- (2) Is there a difference between males and females on computer anxiety scores?
- (3) Is there a difference among the levels of prior computer experience on computer anxiety scores?

Data Analysis

The research questions were answered through a one-way analysis of variance (ANOVA) technique. The dependent variable was computer anxiety. The independent variables were prior computer experience, grade level, and gender. An F statistic, based on the calculation of the analysis of variance (ANOVA), was used to determine the significant differences between the dependent variable and each independent variable separately. The level of significance chosen for this study was 0.05.

Results

Tables 1 through 3 show the means and standard deviations of computer anxiety and the independent variables of grade level, gender, and prior computer experience. Mean scores for students tended to be high.

Grade level was not shown to be a significant factor on computer anxiety, $F(3,63) = 1.172$, $p = .328$. Gender made a significant difference on computer anxiety. Male students had higher mean scores than female students did. This indicated that male students had lesser anxiety toward computers. The $F(1,65)$ value was 8.568 and $p = .005$.

Computer experience, $F(2,64) = 6.356$, $p = .003$ showed a significant difference in computer anxiety. Students that had more computer experience received higher mean scores than students that had less computer experience.

DISCUSSION

The subjects of this study received high mean scores, which corresponded with lower anxiety. Analysis of variance technique was used to test the difference between the dependent variable (computer anxiety) and each independent variable (grade level, gender, and prior computer experience). No significant differences was found for the variable of grade level. Gender made a significant difference on computer anxiety. Male students scored significantly higher on the attitude scale than females did. Computer experience was significantly related to computer anxiety to the extent that the length of prior experience in using computers was directly related to the amount of anxiety demonstrated by the test subjects. Subjects with more experience showed lesser anxiety toward computers. Based on the findings, this study recommends: 1. A further study to

find out a clear understanding of why females have more anxiety toward computers; 2. Computer experience be prepared for high school student before their involvement in classroom; and 3. A further study to delineate other computer experiences, and possibly, the nature of these computer experiences and other variables such as keyboarding, programming knowledge, courseware knowledge i.e. computer games, simulation, tutorial, etc. that may relate to lesser anxiety toward computers.

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Table 1. Means & Standard Deviation of Computer Anxiety and Grade Level

Grade Level	N	Mean	SD
9	18	3.538	0.434
10	12	3.200	0.676
11	22	3.490	0.479
12	15	3.334	0.641

Table 2. Means & Standard Deviation of Computer Anxiety and Gender

Gender	N	Mean	SD
Male	38	3.578	0.441
Female	29	3.203	0.608

Table 3. Means & Standard Deviation of Computer Anxiety and Computer Experience

Computer Experience	N	Mean	SD
Less than 1 week	15	3.053	0.670
1 week to 6 months	15	3.334	0.577
More than 6 months	37	3.597	0.395